**How this investigation fits within the “Concept and Lesson Map”:**

**Overview for Unit 3: Big and Little Worms**

* Observe and compare structure and behavior of red worms and night crawlers.
* Observe and describe the environment in which red worms and night crawlers survive.

**Overarching question(s) for this whole investigation:**

* How are the body parts of red worms and night crawlers the same and different?

**Attending to “How People Learn”**

How People Learn Key Finding #1: Preconceptions

**Eliciting Student Ideas:**

* Show pre-assessment page from the beginning of Investigation 1 titled “Is it a plant? Is it an animal?” to the entire class. Ask students if the cat is an animal. Have students describe the body parts of the cat. Ask what body parts the cat uses to move. Log student ideas on one side of a box-and-T chart or Comparing/Contrasting Thinking Map. The other side of the diagram/map will be used at the end of this investigation for a whole class discussion and assessment.

**Common Student Preconceptions:**

* “...children’s concepts of organisation of the body..by age 10...children appear to understand that the body contains numerous organs which function together in maintaining life. ” (Driver, 1994), 26)
* “...young children gave egocentric explanations for parts of the body...a shift in children’s thinking occurs between the ages of 7 and 9, from a holistic, human-centered view to a view which recognizes different functional parts working together.” (Driver, 1994, 26)
* “...to many students animals are only the large land mammals, such as those found as pets, on farms, or in zoos...reasons for identifying something as an animal included: four legs, large size, land habitat, fur and noise production.” (Driver, 1994, 22)
* “People are not animals. Animals are four footed and furry. Animals are wild, pets, or farm animals. Animals are large. Animals live on land.”

How People Learn Key Finding #2: Facts/Concepts/Knowledge

**WA State Content Standards “Science Domains” (EALR 4)**

* K-1 LS1B All plants and animals have various external parts.
* K-1 LS1D Different animals use their body parts in different ways to see, hear, grasp objects, and move from place to place.

**WA State Science Standards “Crosscutting Concepts and Abilities” (EALRs 1-3)**

* K-1 SYSA Living and nonliving things are made of parts. People give names to the parts that are different from the name of the whole object, plant, or animal.
* K-1 INQD Scientists report on their *investigation*s to other scientists, using drawings and words.

**Key Understandings For the Teacher:**

* Read pages 4-7 of FOSS Animals 2x2 Investigation 3.
* Read Benchmarks, 1993, pages 101-102, 5A Diversity of Life
* Students are building upon their preconception that animals can have body parts that help them move beyond arms and legs. Student observations about these body parts are made when students watch each animal’s reaction when their habitat is disturbed.

How People Learn Key Finding #3: Metacognition

Metacognition: How did my thinking change? What caused the change? How did I come to believe this?

* At times when students are changing the animal habitat or interacting with the animal, teachers may want to ask questions like “What happened when you...?” “How did the animal (move away, turn, go through)?” “How is this the same/different than the (fish, guppy, worm, snail) movement?”
* Refer to the class-made box-and-T chart or Comparing/Contrasting Thinking Map from the beginning of this investigation. Complete the second side of the diagram/map for either the red worm or nightcrawler, drawing attention to body parts. The focus of this comparison between the cat from the original pre-assessment and one of the worms is to expand the students concept of animal.
* Refer to the pre-assessment titled “Is it a plant? Is it an animal?” as a whole class. Ask students which pictures are animals and to explain their thinking.

**Suggested Assessments for Student Understanding:**

Refer to Eliciting Student Ideas sections of this document.

**Additional Information**

**Materials and Student Management**

* Use student sheet #30 (home/school connection page) to have students progressively add animals to the picture of the environments after investigating each animal. Students color and cut out the picture of the animals, then glue them to the picture in the correct environment for that animal. This is a page in their science notebook that students’ will refer to over and over. This sheet could also be re-done at the end of the unit as an assessment piece.
* Try to keep all living organisms that have already been used in previous investigations available in the classroom for continued observation, comparing and contrasting.

Timing Considerations

* Teachers may want to practice with the worms ahead of time.
* Order live organisms ahead of date needed. Check with distributor for time needed for delivery, often this is 3-6 weeks.